

REMARKS

The Office Action of January 10, 2006 has been reviewed and the Examiner's comments carefully considered. The present Amendment amends claims 21 and 35 in accordance with the specification as originally filed. No new matter has been added. Therefore, claims 21-39 remain in this application, and claim 21 is in independent form.

Claim Objections

Claim 35 stands objected to for informalities. Specifically, the Examiner contends that the recitation of "the circuit board" in the claim lacks proper antecedent basis. The Applicants believe that the above amendment to claim 35 overcomes the Examiner's informality objection. Reconsideration and withdrawal of this objection are respectfully requested.

35 U.S.C. § 102 Rejections

Claims 21-24, 33 and 34 stand rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 5,684,903 to Kyomasu et al. (hereinafter "the Kyomasu patent". The Examiner has also rejected claims 21 and 35-38 under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 5,708,743 to DeAndrea et al. (hereinafter "the DeAndrea patent"). In view of the above amendments and the following remarks, the Applicants respectfully request reconsideration of these rejections.

As defined by independent claim 21, the present invention is directed to a connector for the detachable connection of at least one optical waveguide to at least one optoelectronic component which is arranged and electrically contacted as a chip on the surface of a support, and which has an optical axis perpendicular to the support. The optical waveguide includes a fiber-optic plug connector. The connector includes a base part which is fastened on the surface of the support surrounding the optoelectronic component and which has a through-hole for optical signals to be exchanged between the optoelectronic component and the optical waveguide and a coupling part which is exclusively mounted to the base part facing outward and which has an insertion opening for the insertion of the fiber-optic plug connector.

The connector of the present invention is designed to make a plug-in connection between a fiber-optic cable with a standard plug-in connector and a “naked” optoelectronic chip arranged on and electrically connected to a plane substrate (i.e., the support) in a flexible manner. In order to achieve this objective, the connector of the present invention is divided into two separate parts: a base part and a coupling part. The base part is mounted to the plane substrate, thereby surrounding the naked chip and an optical path is provided to the chip via a through hole in the base part. The coupling part is used as an exchangeable adapter for various standard optical plug-in connectors. The coupling part is exclusively mounted to the base part in order to be independent of the configuration of the chip on the plane substrate. Therefore, since the coupling part is exclusively mounted to the base part, there is no direct mechanical connection between the coupling part and the plane substrate.

The Kyomasu patent discloses a receptacle comprising a rigid sleeve 30 and a lens 40 provided in a case 10. Case 10 further houses in a electro-optical element 50. A connector holding section 20 is fixed to an outer wall of the case 10 (see FIG. 1). The electro-optical element 50 includes a TO housing and electrical connecting leads extending from the housing as shown in FIG. 2A.

The Kyomasu patent does not teach or suggest an optoelectronic component arranged and electrically contacted as a chip on the surface of a support as required by independent claim 21. Instead, the Kyomasu patent discloses that the electro-optical element 50 includes lead pins 150e and 150e connected directly thereto via bonding wires 50f (see column 9, lines 37-40). Therefore, the Kyomasu patent fails to teach or suggest an “optoelectronic component ... electrically contacted as a chip on the surface of a support” as no electrical connection exists between the electro-optical element 50 and a lid portion 10c.

Furthermore, the Kyomasu patent does not teach or suggest a base part for surrounding an electro-optical chip on a plane substrate. Instead, the Kyomasu patent discloses a case 10 that surrounds the housing of electro-optical element 50 and is closed below the electro-optical element 50 by means of the lid portion 10c.

For the foregoing reasons, the Applicants believe that the subject matter of amended independent claim 21 is not anticipated by the Kyomasu patent. Reconsideration of the rejection of claim 21 is respectfully requested.

Claims 22-24, 33 and 34 depend from and add further limitations to amended independent claim 21 or a subsequent dependent claim and are believed to be patentable for the reasons discussed hereinabove in connection with independent claim 21. Reconsideration of the rejection of claims 22-24, 33 and 34 is respectfully requested.

The DeAndrea patent discloses a connector for optically coupling a fiber optic transmission line and an optoelectronic device electrically coupled to a substrate. The connector includes a naked optoelectronic chip 30 mounted on a plane substrate 15. The connector further includes a first coupling part or light-bending means 150 mounted on the substrate 15 and surrounding the chip 30 as shown in FIG. 13. A second coupling part or casing 50 is also mounted on the substrate 15 surrounding the first coupling part 150.

The DeAndrea patent does not teach or suggest that the coupling part (i.e., second coupling part 50) is exclusively mounted to the base part (i.e., first coupling part 150) as required by independent claim 21. Instead, the DeAndrea discloses that the first coupling part 150 and the second coupling part 50 are both mounted to the substrate 15 as clearly shown in FIG. 13. Such a configuration reduces the flexibility of the connector. Accordingly, DeAndrea patent fails to teach or suggest the invention as claimed in amended independent claim 21 because the DeAndrea patent does not disclose a connector with a coupling part that is exclusively mounted to a base part.

For the foregoing reasons, the Applicants believe that the subject matter of amended independent claim 21 is not anticipated by the DeAndrea patent. Reconsideration of the rejection of claim 21 is respectfully requested.

Claims 35-38 depend from and add further limitations to amended independent claim 21 or a subsequent dependent claim and are believed to be patentable for the reasons discussed hereinabove in connection with independent claim 21. Reconsideration of the rejection of claims 35-38 is respectfully requested.

35 U.S.C. § 103 Rejections

Claims 25-32 and 39 stand rejected under 35 U.S.C. § 103(a) for obviousness based upon Kyomasu patent. In view of the above amendments and the following remarks, the Applicants respectfully request reconsideration of this rejection.

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Claims 25-32 and 39 depend from and add further limitations to amended independent claim 21 or a subsequent dependent claim and are believed to be patentable for at least the reasons discussed hereinabove in connection with amended independent claim 21. Reconsideration and withdrawal of the rejection of claims 25-32 and 39 are respectfully requested.

CONCLUSION

Based on the foregoing amendments and remarks, reconsideration of the rejections and allowance of pending claims 21-39 are respectfully requested.

Respectfully submitted,

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